

CLAIMS

1. A wireless ad-hoc communication system constituted by a plurality of terminals, comprising:

5 a first terminal that encrypts a payload of a broadcast frame and that transmits the broadcast frame; and

a second terminal that receives the broadcast frame and that decodes the payload of the broadcast frame,

10 wherein the first terminal encrypts the payload of the broadcast frame using a broadcast encryption key of the first terminal, and

the second terminal decodes the payload of the broadcast frame using the broadcast encryption key of the first terminal.

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2. The wireless ad-hoc communication system according to claim 1, wherein the second terminal includes:

an encryption-key management list table having at least an encryption-key management list comprising a set of a  
20 terminal identifier of the first terminal and the broadcast encryption key of the first terminal;

means for searching the encryption-key management list table based on the terminal identifier of the first terminal included in a start-terminal identifier of the received  
25 broadcast frame to extract the corresponding broadcast

encryption key of the first terminal; and

means for decoding the payload of the broadcast frame using the extracted broadcast encryption key of the first terminal.

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3. The wireless ad-hoc communication system according to claim 1, wherein the first terminal includes:

a generated-key table that stores the broadcast encryption key of the first terminal;

10 means for encrypting the payload of the broadcast frame using the broadcast encryption key of the first terminal stored in the generated-key table; and

means for transmitting the encrypted broadcast frame.

15 4. A terminal comprising:

an encryption-key management list table having at least one encryption-key management list comprising a set of a terminal identifier of a different terminal and a broadcast encryption key of the different terminal;

20 means for searching the encryption-key management list table for the encryption-key management list including a start-terminal identifier of a received broadcast frame to extract the corresponding broadcast encryption key; and

means for decoding a payload of the broadcast frame  
25 using the extracted broadcast encryption key.

5. A terminal comprising:

an encryption-key management list table having at least one encryption-key management list that stores a unicast  
5 encryption key between said terminal and a different terminal and a broadcast encryption key of the different terminal in association with a terminal identifier of the different terminal;

means for, when an end-terminal identifier of a  
10 received frame is a broadcast address, searching the encryption-key management list table for the encryption-key management list including a start-terminal identifier of the frame to extract the corresponding broadcast encryption key as an encryption key, and when the end-terminal identifier  
15 of the received frame is other than a broadcast address, searching the encryption-key management list table for the encryption-key management list including a start-terminal identifier of the frame to extract the corresponding unicast encryption key as the encryption key; and  
20 means for decoding a payload of the frame using the extracted encryption key.

6. A terminal comprising:

a generated-key table that stores a broadcast  
25 encryption key of said terminal;

means for encrypting a payload of a broadcast frame  
using the broadcast encryption key; and

means for transmitting the encrypted broadcast frame.

5 7. A terminal comprising:

a generated-key table that stores a broadcast  
encryption key of said terminal;

an encryption-key management list table having at least  
one encryption-key management list that stores a unicast  
10 encryption key between said terminal and a different  
terminal in association with a terminal identifier of the  
different terminal;

means for, when a frame to be transmitted is a  
broadcast frame, encrypting a payload of the broadcast frame  
15 using the broadcast encryption key of the generated-key  
table, and when the frame to be transmitted is a unicast  
frame, searching the encryption-key management list table  
for the encryption-key management list including an end-  
terminal identifier of the unicast frame to encrypt a  
20 payload of the unicast frame using the corresponding unicast  
encryption key; and

means for transmitting the encrypted frame.

8. A terminal comprising:

25 means for encrypting a terminal identifier and a

broadcast encryption key of said terminal using a unicast encryption key of a transmission-destination terminal; and  
means for transmitting the encrypted terminal identifier and broadcast encryption key of said terminal to  
5 the transmission-destination terminal.

9. A terminal comprising:

an encryption-key management list table having at least one encryption-key management list that stores a broadcast  
10 encryption key of a different terminal in association with a terminal identifier of the different terminal;

means for encrypting the encryption-key management list using a unicast encryption key of a transmission-destination terminal; and

15 means for transmitting the encrypted encryption-key management list to the transmission-destination terminal.

10. A terminal comprising:

means for receiving a terminal identifier and a  
20 broadcast encryption key of a different terminal from the different terminal;

means for encrypting the terminal identifier and the broadcast encryption key of the different terminal using a broadcast encryption key of said terminal; and

25 means for broadcasting the encrypted terminal

identifier and broadcast encryption key of the different terminal.

11. A method for decoding a broadcast frame in a terminal  
5 that includes an encryption-key management list table having  
at least one encryption-key management list comprising a set  
of a terminal identifier of a different terminal and a  
broadcast encryption key of the different terminal, the  
method comprising the steps of:

10        searching the encryption-key management list table for  
the encryption-key management list including a start-  
terminal identifier of a received broadcast frame to extract  
the corresponding broadcast encryption key; and

      decoding a payload of the broadcast frame using the  
15 extracted broadcast encryption key.

12. A method for encrypting a broadcast frame in a terminal  
that includes a generated-key table storing a broadcast  
encryption key of said terminal, the method comprising the  
20 steps of:

      encrypting a payload of the broadcast frame using the  
broadcast encryption key stored in the generated-key table;  
and

      transmitting the encrypted broadcast frame.

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13. A method for distributing a broadcast encryption key in a second terminal, comprising the steps of:

receiving a terminal identifier and a broadcast encryption key of a first terminal that are encrypted using a unicast encryption key between the first terminal and the second terminal;

decoding the encrypted terminal identifier and broadcast encryption key of the first terminal using the unicast encryption key;

10 encrypting a terminal identifier and a broadcast encryption key of the second terminal using the unicast encryption key; and

transmitting the encrypted terminal identifier and broadcast encryption key of the second terminal to the first terminal.

14. A method for distributing a broadcast encryption key in a second terminal, comprising the steps of:

receiving a terminal identifier and a broadcast encryption key of a first terminal that are encrypted using a unicast encryption key between the first terminal and the second terminal;

decoding the encrypted terminal identifier and broadcast encryption key of the first terminal using the unicast encryption key;

encrypting the terminal identifier and the broadcast encryption key of the first terminal using a broadcast encryption key of the second terminal; and

transmitting the encrypted terminal identifier and  
5 broadcast encryption key of the first terminal to a third terminal.

15. A program that causes a terminal including an encryption-key management list table having at least one  
10 encryption-key management list comprising a set of a terminal identifier of a different terminal and a broadcast encryption key of the different terminal to execute the steps of:

searching the encryption-key management list table for  
15 the encryption-key management list including a start-terminal identifier of a received broadcast frame to extract the corresponding broadcast encryption key; and

decoding a payload of the broadcast frame using the extracted broadcast encryption key.

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16. A program that causes a terminal including a generated-key table that stores a broadcast encryption key of said terminal to execute the steps of:

encrypting a payload of a broadcast frame using the  
25 broadcast encryption key stored in the generated-key table;



and

transmitting the encrypted broadcast frame.

17. A program that causes a second terminal to execute the  
5 steps of:

receiving a terminal identifier and a broadcast  
encryption key of a first terminal that are encrypted using  
a unicast encryption key between the first terminal and the  
second terminal;

10 decoding the encrypted terminal identifier and  
broadcast encryption key of the first terminal using the  
unicast encryption key;

encrypting a terminal identifier and a broadcast  
encryption key of the second terminal using the unicast  
15 encryption key; and

transmitting the encrypted terminal identifier and  
broadcast encryption key of the second terminal to the first  
terminal.

20 18. A program that causes a second terminal to execute the  
steps of:

receiving a terminal identifier and a broadcast  
encryption key of a first terminal that are encrypted using  
a unicast encryption key between the first terminal and the  
25 second terminal;

decoding the encrypted terminal identifier and  
broadcast encryption key of the first terminal using the  
unicast encryption key;

5        encrypting the terminal identifier and the broadcast  
encryption key of the first terminal using a broadcast  
encryption key of the second terminal; and

transmitting the encrypted terminal identifier and  
broadcast encryption key of the first terminal to a third  
terminal.